

## **AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions and listings of claims in the application.

### **Listing of Claims:**

Claims 1 - 12 canceled.

**13. (Currently amended):** A fuel injection valve for internal combustion engines comprising

- a valve body (1) having a longitudinal bore (3) formed therein
- a valve needle (5) having a longitudinal axis (15) mounted for sliding movement in the longitudinal direction inside the bore (3),
- a conical valve seat (11) formed on the combustion chamber end of the bore (3),
- a pressure chamber (19) formed between a section of the valve needle (5) and the wall of the bore (3) and extending to the valve seat (11), which pressure chamber can be filled with fuel,
- a valve sealing surface (7) embodied on the valve needle (5), which sealing surface cooperates with the valve seat (11) in order to control at least one injection opening leading from the valve seat (11),
- an annular groove (35) formed in the sealing surface (7) and extending in a radial plane of the valve needle (5), the downstream edge of the annular groove (35) being embodied as a sealing edge (38), ~~and~~
- means hydraulically connecting the annular groove (35) to the pressure chamber (19) on a continuous basis,

wherein the valve sealing surface (7) comprises a first conical surface (30) and a second conical surface (32) disposed downstream of the first, with the annular groove (35) extending between them, and

wherein the opening angle of the first conical surface (30) is smaller than the opening angle of the conical valve seat (11) and the opening angle of the second conical surface (32) is greater than the opening angle of the conical valve seat (11).

14. (Canceled)

15. (Canceled)

16. (Currently amended): The fuel injection valve according to claim 13, ~~claim 14~~, wherein the annular groove (35) delimits both the first conical surface (30) and the second conical surface (32).

17. (Currently amended): The fuel injection valve according to claim 13, ~~claim 15~~, wherein the annular groove (35) delimits both the first conical surface (30) and the second conical surface (32).

18. (Currently amended): The fuel injection valve according to claim 13, ~~claim 15~~, wherein the seat angle difference ( $\delta_2$ ) between the second conical surface (32) and the valve seat (11) is

smaller than the seat angle difference ( $\delta_1$ ) between the first conical surface (30) and the valve seat (11).

19. (Currently amended): A fuel injection valve for internal combustion engines comprising

a valve body (1) having a longitudinal bore (3) formed therein

a valve needle (5) having a longitudinal axis (15) mounted for sliding movement in the longitudinal direction inside the bore (3),

a conical valve seat (11) formed on the combustion chamber end of the bore (3),

a pressure chamber (19) formed between a section of the valve needle (5) and the wall of the bore (3) and extending to the valve seat (11), which pressure chamber can be filled with fuel,

a valve sealing surface (7) embodied on the valve needle (5), which sealing surface cooperates with the valve seat (11) in order to control at least one injection opening leading from the valve seat (11),

an annular groove (35) formed in the sealing surface (7) and extending in a radial plane of the valve needle (5), the downstream edge of the annular groove (35) being embodied as a sealing edge (38),

means hydraulically connecting the annular groove (35) to the pressure chamber (19) on a continuous basis,

wherein the valve sealing surface (7) comprises a first conical surface (30) and a

**second conical surface (32) disposed downstream of the first, with the annular groove (35) extending between them, and**

~~The fuel injection valve according to claim 14~~, wherein in the closing motion of the valve needle (5) toward the valve seat (11), the second conical surface (32) comes into contact with the valve seat (11) first and the first conical surface (30) only comes into contact with the valve seat (11) through a deformation of the valve needle (5) and/or the valve body (1).

**20. (Previously presented):** The fuel injection valve according to claim 13, wherein the means providing the hydraulic connection between the annular groove (35) and the pressure chamber (19) comprises at least one connecting bore (40) extending inside the valve needle (5).

**21. (Previously presented):** The fuel injection valve according to claim 20, wherein the at least one connecting bore (40) is embodied as a cross bore (44).

**22. (Previously presented):** The fuel injection valve according to claim 20, wherein the at least one connecting bore (40) connects the annular groove (35) to the surface of shaft (205) of the valve needle (5).

**23. (Previously presented):** The fuel injection valve according to claim 21, wherein the at least one connecting bore (40) connects the annular groove (35) to the surface of shaft (205) of the valve needle (5).

**24. (Currently amended):** The fuel injection valve according to claim 13, ~~claim 14~~, wherein the means providing the hydraulic connection of the annular groove (35) to the pressure chamber (19) comprises at least one recess (42) provided in the first conical surface (30).

**25. (Currently amended):** The fuel injection valve according to claim 13, ~~claim 15~~, wherein during the closing motion of the valve needle (5), the first part to come into contact with the valve seat (11) is the sealing edge (38) embodied at the transition from the annular groove (35) to the second conical surface (32).

**26. (Previously presented):** The fuel injection valve according to claim 13, wherein the fuel in the pressure chamber (19), at least at certain times, has a pressure of more than 100 MPa..